ORIGINAL ARTICLE

Dopaminergic Neuroprotection with Ginkgolide in 6-Hydroxydopamine Rat Parkinson's Disease Model

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Abstract

Background and purpose: Parkinson's disease (PD) is a prevalent movement disorder in elderly with progressive motor complications due to antioxidant defense system deficiency and accumulation of degraded proteins in dopaminergic neurons of midbrain. Ginkgolide is biologically active terpenic lactones as a polyphenol, with potent antioxidant and anti-inflammatory properties. The present study aimed to evaluate the neuroprotective effects of Ginkgolide in 6-hydroxydopamine (6-OHDA) rat model of PD.

Materials and methods: Intrastriatal 6-OHDA-parkinson's disease rat model was pretreated with Ginkgolide at 50 mg/kg/day for 4 weeks. Apomorphine-induced rotation test was applied to evaluate the neuroprotective effects of Ginkgolide. In addition, the antioxidant effects of Ginkgolide were assessed by analyzing the levels of thiobarbituric acid reactive substances (TBARS), Glutathione-S-transferase (GST), reactive oxygen species (ROS) homovanillic acid (HVA), and dopamine (DA).

Results: Ginkgolide pretreatment led to reduced nigral and striatal TBARS, and ROS and increased the levels of GST, HVA, and DA. Meanwhile, Ginkgolide attenuates apomorphine-induced rotational bias and reduced contra-lateral rotation in Ginkgolide treatment group.

Conclusion: These findings indicated the neuroprotective potential of Ginkgolide in 6- OHDA rat model of PD via amelioration of oxidative stress.

Keywords: Parkinson's disease, 6-hydroxydopamine, ginkgolide, oxidative stress

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